ABSTRACTS

of the

17th International Congress
of the
Hungarian Society for Microbiology

Guest-Editors

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July 8–10, 2015
Budapest, Hungary

TEMPERATURE-, PH- AND WATER ACTIVITY DEPENDENCE OF *PHOTORHABDUS LUMINESCENS* STRAINS AND THEIR *IN VITRO* INHIBITORY EFFECT TO TRICHODERMA SPECIES CAUSING MUSHROOM GREEN MOULD DISEASE

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Agaricus bisporus, Lentinula edodes and *Pleurotus ostratus* are the three most abundant cultivated mushrooms in the world. Their production is getting increasingly affected by green mould infections causing great crop losses. The fungi responsible for the green mould disease of *Pleurotus* have been described as *Trichoderma pleurotum* and *T. pleuroticola*. *T. aggressivum* is the main causative agent of *Agaricus* green mould disease, while *T. pleuroticola* was reported from infected Shiitake mushroom. As the application of chemical compounds against *Trichoderma* species in mushroom production is not allowed or very limited, there is an increasing need for biological control agent. *Photorhabdus luminescens* strains can be promising candidates for this purpose. The aim of our study was to determine the *in vitro* inhibitory effect of 2 *P. luminescens* (SZMC 22400, SZMC 22401) and 2 *P. luminescens* subsp. *kayaii* (SZMC 22402, SZMC 22403) strains against four *Trichoderma* strains causing mushroom green mould disease (*T. aggressivum* f. *aggressivum*, *T. aggressivum* f. *europaeum*, *T. pleuroti* and *T. pleuroticola*). We used an image analysis based method for the quantification of the inhibitory effect which is a simple method to compare the activities of different strains. After this image analysis we defined the Antibiosis Index (AbI) values of the *Photorhabdus* isolates in comparison with the growth of control Trichoderma strains. All of the tested *P. luminescens* strains were sustantially inhibiting the growth of the green mould strains, with *P. limunescens* subsp. *kayaii* SZMC 22403 showing the highest inhibition of all tested *Trichoderma* strains. We also examined the temperature-, pH- and water activity dependence of *P. luminescens* strains on microtiter plates. In the case of *P. luminescens* SZMC 22400 and SZMC 22401 the optimum temperature value were 25 °C and 20 °C, respectively, they proved to be higher (30 °C) in the case of the two *P. luminescens* subsp. *kayaii* strains. All of the tested *P. luminescens* strains showed an increased growth at pH values between 5 and 8 while none of them were able to grow under the water activity value of 0.980. The knowledge about the temperature-, pH- and water activity-dependence of *P. luminescens* strains and about their inhibitory effects against *Trichoderma* species is very important when planning the development of an appropriate control method against *Trichoderma* green mould in mushroom production.

Supported by the EU co-financed by the European Social Fund (grant agreement no. TÁMOP-4.2.2.B-15-0006).

WIDENING SPECTRUM OF FILAMENTOUS FUNGI CAUSING MYCOTIC KERATITIS

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